

ABSTRACT OF THE DISCLOSURE

A method for fabricating a semiconductor device includes the following steps. At first, a Ru or RuO<sub>2</sub> film and a SiO<sub>2</sub> layer are formed over a Si substrate in that order. Then, a resist pattern is formed on the SiO<sub>2</sub> layer and is then provided as a mask to etch the SiO<sub>2</sub> layer to form a contact hole. The Ru or RuO<sub>2</sub> film is exposed at the bottom of the contact hole. Subsequently, a plasma ashing is performed using an ashing gas prepared by mixing O<sub>2</sub> with N<sub>2</sub> where the composition ratio of N<sub>2</sub> is 50 % or more at a substrate temperature of 200 °C or more for ashing the resist pattern. Consequently, the present invention allows the ashing of the resist pattern over the Ru or RuO<sub>2</sub> film at a high selectivity to prevent the Ru or RuO<sub>2</sub> film from becoming disappeared.